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# Dugong Conservation a Critical Issue in Sri Lanka

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## ABSTRACT

The dugong (*Dugong dugon*) was traditionally hunted and considered a delicacy in Sri Lanka. Dugongs were common in the Gulf of Mannar (north-west coast) and were the focus of a targeted fishery till the mid-20<sup>th</sup> century. Overexploitation caused this population to decline rapidly and recognising this, the Sri Lankan Government declared the dugong a protected species in 1970. Legal protection was however not followed by effective law enforcement and recent surveys indicate that illegal harvesting still continues. Due to an unstable security situation the remaining dugong habitat was inaccessible to researchers till 2009 and no censuses were carried out, while illegal capture went largely undetected and unreported. While the area is now accessible population assessments and threat mitigation in the form of proactive conservation measures are a matter of urgent priority. While research is essential to develop informed conservation measures such activities need to be implemented in a manner that is sensitive to local socioeconomic circumstances. Protection of endangered species is not yet considered a priority among impoverished coastal communities. Therefore these issues need urgent and innovative attention to provide this dugong population with a chance of survival and prevent imminent local extirpation.

**Keywords:** *Dugong dugon*, Sri Lanka, research, conservation.

## INTRODUCTION

The dugong (*Dugong dugon*) inhabits tropical and subtropical waters of the Indo-Pacific and is the only extant species of the Order Sirenia in these waters. The IUCN Red List of Threatened Species (Hilton-Taylor, 2000) classifies the dugong as vulnerable on a global scale. Dugong populations are dwindling in many parts of their range (Marsh *et al.*, 2002) and declining numbers, shrinking area of occurrence, degrading habitat quality and effects of human exploitation are visible throughout most of its range.

In the past dugongs were common in the Palk Strait and Gulf of Mannar off the north/north-western coast of Sri Lanka (Haley, 1883; Phillips, 1927). The species was however traditionally hunted and considered a delicacy by local people in the island and dugongs were the focus of a targeted fishery till the mid-20<sup>th</sup> century (Norris, 1960). Although dugongs were occasionally caught off the east coast in the distant past, there are no recent records (Bertram and Bertram, 1970).

## CURRENT SITUATION

The extensive shallow coastal waters of the Gulf of Mannar from Adam's Bridge south towards the Puttalam lagoon (Fig. 1) and the sea around associated islets off the northwest coast still support some seagrass beds suitable as feeding grounds for the dugong (Marsh *et al.*, 2002). The remaining dugong population currently occurs in this area (Ilangakoon *et al.*,

2004). No comprehensive surveys have been carried out on this population of dugongs in the past three decades due to an ethnic conflict which prevailed in the north of the island, and made the area inaccessible to researchers till late-2009.

In the early 1980's, brief aerial surveys of 1-2 day's duration, resulted in a few animals (1981) or none (1983) being sighted (Leatherwood and Reeves, 1989) while, the sale of dugong flesh in certain areas on the west coast was reported in the course of cetacean bycatch surveys in the mid-1980s (Leatherwood and Reeves, 1989). An interview survey carried out in 2004 concluded that the species still persists in the near-shore waters off northwestern Sri Lanka despite declining numbers (Ilangakoon *et al.*, 2004; Ilangakoon, 2010). While this survey also found that these dugongs still appear to be breeding based on sightings of calves, it raised questions on the long-term viability of this population due to anthropogenic threats and prevailing socio-economic realities (Ilangakoon, 2010).

Several decades of overexploitation to feed a demand driven market due to the popularity of dugong flesh caused this population to decline rapidly. Recognizing the drastic decline in dugong numbers the Sri Lankan Government enacted protective legislation for the dugong in 1970, whereby it was declared a totally protected species under the Fauna and Flora Protection Ordinance (FFPO). Accordingly it is now illegal to kill, harm or sell a dugong or any part of a dugong anywhere in Sri Lanka.

## ISSUES AND THREATS

Sri Lanka's northwestern waters are important fishing grounds and gillnets are the most extensively used fishing gear in the intensive fishery. Accidental by-catch of dugongs is common in these gillnets and there are no prevention or mitigation measures in place. Although organized hunting of dugongs ceased after they were declared a protected species, illegal hunting has continued to the present time due to several reasons:

- Dugong flesh has been considered a delicacy among local people since time immemorial, creating a demand driven market.
- Although protected by law, enforcement is minimal to non-existent and thus legal protection has not been a deterrent to illegal hunting activity.
- The impoverished socio-economic circumstances of fishing communities in this part of the country is not conducive to conservation as they still view the dugong as a resource that can bring them a lucrative income.

Destructive fishing practices such as the use of explosives for blast fishing and the use of push-nets in seagrass habitats are other anthropogenic threats that cause destruction to the sensitive seagrass ecosystems that constitute the remaining dugong habitat. These practices are still prevalent in some areas inhabited by the dugong.

More recently the Sethu Samudram ship canal to be constructed off the Tamil Nadu coast of India involves large scale dredging of the seabed between India and Sri Lanka and could cause extensive siltation of seagrass beds and fragmentation of the remaining dugong habitats in the Gulf of Mannar (Ilangakoon, 2010). The area around the Kalpitiya peninsula and associated islands has also been earmarked for tourism development. This could have further adverse impacts on nearshore areas in the form of pollution, degradation and destruction of essential dugong habitat.

## POSSIBLE CONSERVATION SOLUTIONS

The remaining dugong population off northwestern Sri Lanka faces a multitude of anthropogenic threats. While some like illegal hunting are visible and directly threaten individuals and the viability of the population in the long term, other more indirect threats like habitat destruction and fragmentation are more difficult to detect and quantify.

The situation for this dugong population has now reached a critical point from which recovery would be difficult without immediate intervention. However, the necessary data on which solutions can be based are still lacking due to several decades of not being able to do any research or assessments. Therefore there is an urgent need for quantitative assessment of the population and its

viability in order to design and implement the necessary management interventions and conservation measures that are urgently needed.

It is also important to take into consideration the impoverished socio-economic status of fishing communities in the area and the human development needs of the area when designing effective management measures to protect the dugong. In this respect management interventions and law enforcement need to be strengthened while simultaneously creating awareness and enhancing education about dugongs and the need to conserve them among the local communities. Local communities have neither the level of education, nor the economic stability, that would provide an environment that is conducive to top-down conservation through strict law enforcement at present. Endangered species conservation is considered as secondary to human economic needs and development priorities among both the authorities and the local population. Therefore it is important that education and outreach activities are implemented as a matter of priority for conservation to be effective.

## RECOMMENDATIONS

Based on the critical situation of this dugong population and the socio-economic circumstances of the local human population the following recommendations can be made as immediate priorities:

- Undertake immediate and rapid assessment of the dugong population off northwest Sri Lanka.
- Undertake habitat monitoring and identify critical habitats that are essential feeding grounds for the remaining dugong population.
- Based on habitat assessments design and create a network of Marine Protected Areas (MPA's) for dugong conservation.
- Work with local communities in a transparent and inclusive manner when designing and implementing MPA's. Preferably develop a co-management framework where local communities would be major stakeholders in the management of these MPA's.
- Undertake immediate awareness creation, education and outreach activities within local communities adjacent to dugong habitat, targeting consumer groups and fishing communities that pose the largest direct threat to dugongs.
- Develop and quickly implement an incentive scheme where fishing communities could benefit more by conserving dugongs instead of hunting them.

- Strengthen enforcement of existing laws and educate law enforcement authorities on the importance of dugong conservation.

- Educate the wider Sri Lankan public and government authorities responsible for development activities in order to make them more sensitive to dugong conservation needs and take these into consideration in future development planning for these areas.

The future survival of this dugong population is at present uncertain and in order to ensure that local extirpation does not take place management measures need to be implemented without further delay. If this is not considered as a critical issue and given urgent priority the long-term viability of the remaining dugong population in Sri Lanka could be compromised irreversibly.

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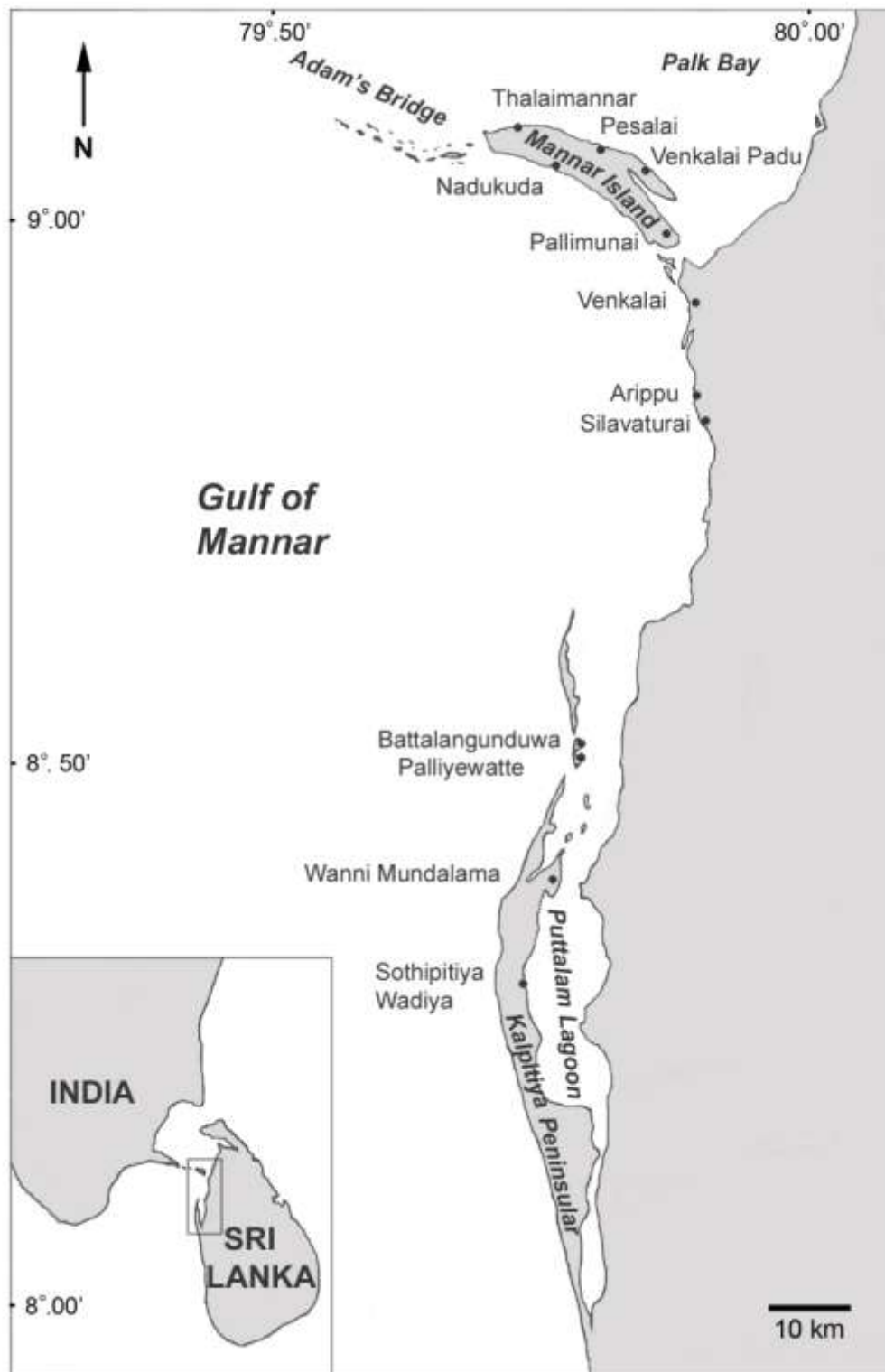


Figure 1 – Area of dugong occurrence with 2004 interview locations